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ABSTRACT

A study was conducted to identify variables associated with question-asking in the college classroom. Specifically, the study examined the influence of instructional interventions on intentions to ask questions. Subjects, 220 university undergraduates enrolled in a basic communication theory course at a midsize, midwestern, urban university, completed a survey assessing their classroom questioning behavior. Findings revealed that instructor gender and student gender partially explained question-asking. The perceived value of class discussion and satisfaction with the individual's current level of question-asking, however, acted as better predictors of student intentions to ask questions in class. The study further revealed that certain instructional interventions interacted with situational factors to influence question-asking intentions. (One figure and 7 tables of data are included; 36 references are attached.) (Author/PRA)

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Variables Associated with Question-asking in the College Classroom

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Abstract: A recent study by Pearson & West (1991) demonstrated that university undergraduates ask few questions in their college courses. This study was conducted to identify variables associated with question-asking in the college classroom. Specifically, the study examined the influence of instructional interventions on intentions to ask questions. Findings revealed that instructor gender and student gender partially explained question-asking. The perceived value of class discussion and satisfaction with one's current level of question-asking, however, acted as better predictors of student intentions to ask questions in class. The study further revealed that certain instructional interventions interacted with situational factors to influence question-asking intentions.

Variables Associated with Question-asking in the College Classroom

Classroom questions have long been recognized as an important mode of instruction. For more than fifty years, educational researchers have claimed the importance of questioning in the classroom (Houston, 1938; Hunkins, 1972; Pearson & West, 1991). Newcastle (1970) showed the benefits of skillful questioning and responding in the development of higher cognitive processes and heightened student interest and involvement in learning. Similarly, Gall (1970) recognized the importance of questioning to increase student thinking and learning. Rosenshine (1976), however, reported that the commonly held belief that "factual questions are bad and higher level question are good" (p. 61) may be a fallacy. He indicated that complex questioning and student-initiated talk actually had a low or negative relationship to achievement in the precollege classroom. Winne (1979) also disputed the generally accepted value of higher-order teacher questioning. These early examples have been part of a long line of research and controversy on questioning (Dillon, 1982). In fact, according to Gliessman (1985), classroom questioning is "among the two or three most studied phenomena in teaching" (p. 1). The nature of that research, however, primarily has studied the precollege level (Karp and Yoels, 1976), and it has emphasized teacher questioning rather than student questioning (Gliessman, 1985; Pearson and West, 1991).

The purpose of this study was to examine the nature of oral questioning behaviors in the college classroom as perceived by students. Although there are many types of questioning behaviors for testing purposes, the intention here was to explore student perceptions of the oral behaviors related to classroom lecture methods. At issue were such considerations as the nature and frequency of student questioning, the demographics of those students who ask questions, communication apprehension and skills, explanations for infrequent questioning, and teacher behaviors.

Review of Literature

Given the size of the body of research on questioning, only a survey of certain areas will be considered here. Considerable research

on the topic of questioning categories, for example, has guided this and other study designs (Carner, 1963; Dillon, 1986; Gall, 1984; Good, Slavings, Harel, and Emerson, 1987; Hall and Pulliam, 1980; Pearson and West, 1991; Sadker and Cooper, 1974). Although the Pearson and West categories were used in the design of this study, data related to those categories will not be reported here.

The Frequency and Nature of Questioning. For years, educators have recognized the importance of teacher questioning and frequently have analyzed the nature of that questioning (Hunkins, 1966). For our purposes, however, we believe an emphasis on understanding the nature of student questioning may be more important than student answers to teacher questions. Carner (1963) wrote: "the evidence that good teaching has taken place is reflected more in the kinds of questions pupils ask than in the abundance of pat answers they can produce" (p. 550). In the research that has emphasized student questions, one approach has been to analyze the nature of the questioning (Good, 1981). Kendrick and Darling (1990) are among the few researchers who examined how students use questions for specific purposes. Historically, research has emphasized direct questioning to the teacher in front of other students. There are, however, various direct methods (i.e. asking questions before or after the class meeting, during breaks, in the instructor's office) and indirect methods (i.e. a written question in class or left in an instructor's mailbox, or by telephone) available to the student who wants to ask a question.

Perhaps one of the most distressing research results--reassuring for those teachers who struggle to obtain only a few questions from their students--is that an average of 3.3 questions per hour is the total asked by all students in a college class (Pearson & West, 1991). This finding confirmed earlier research which indicated student talk in class accounted for less than five minutes in a 50 minute college period (Karp and Yoels, 1976) or approximately 4% of the total number of questions asked during class (Sadker and Cooper, 1974). Although researchers believe that student questions usually are infrequent, we know little about how satisfied students feel about their questioning behaviors or what preferences they have about questioning. Thus, one

area of study here was to determine if student perceptions supported the research about the nature and frequency of college students.

Who Asks Questions? As part of an effort to understand the nature and frequency of student questions, one needs to understand who asks questions. A first consideration is the achievement level of the student. Good, Slavings, Harel, and Emerson (1987) found that as children grew older, low achievers asked fewer questions. They also observed that although males asked more questions in kindergarten than girls did, the trend reversed by junior high school, and balanced out in high school.

Second, the gender of the student or teacher may influence who asks questions. Karp and Yoels (1976) found that males interacted more than females with a male teacher, but the interaction was more balanced with female teachers. Pearson and West found comparable gender differences in question-asking, in that students asked more questions of male teachers than of female teachers, and female students asked fewer questions than male students did of their male teachers. If, in fact, women are more effective at decoding nonverbal cues as indicated by Badini and Rosenthal (1989), then one might expect female students to better interpret whether or not a teacher wants or expects student questioning.

Third, a student's communication skill may affect question-asking. Sadker and Cooper (1974) suggested that students have failed to recognize the importance of questioning in their own oral language development and learning. Darling (1989) intimated that the student who asks questions effectively first must be an effective listener, as she examined the communication implications of the questioning process: "it may be that individuals who are more skilled at communicating have become more adept at learning as well" (p. 39).

Fourth, Karp and Yoels (1976) raised the issue of the college classroom structure as a major factor in influencing who talks. They contended that students count on a small group of students in each class to interact with the teacher. They indicated three factors that contribute to interaction by only a few students: students are seldom tested, teachers seldom call on students who do not volunteer (because

they think it will increase communication apprehension), and students tend to perceive the teacher as an oracle from which "the truth" will come. Karp and Yoels concluded that most students take little responsibility for learning or questioning in the classroom. Students fail to prepare for the class in advance, so they are unable to ask questions. In addition, students do not want the teacher's position to appear threatened by questioning, nor do they want to be criticized themselves by drawing themselves into interaction with the teacher. The result is that only those few students who do the assignments and choose to be actively involved in the learning process interact orally with the teacher. Related to this final point, one might expect communication apprehension to be closely correlated to a student's question-asking behaviors. Karp and Yoels (1976) indicated two issues important to apprehension. First, teachers perceive students as anxious in the classroom and may limit student talk because they do not want to exacerbate the problem. Second, when teachers use behaviors to encourage students to think critically, the students perceive their behaviors as "put downs." Dillon (1981) established student fear as the majority reason why students failed to ask questions, further suggesting a student norm against questioning.

Teacher Behaviors Affecting Student Questioning. Although student characteristics may account for student questioning behaviors, it seems likely that teacher characteristics also account for student questioning behaviors. In one college class discussion about questioning, for example, a woman responded: "If the professor will answer the question directly without making you feel badly about asking, I am willing to ask questions." This student's viewpoint is consistent with the work of van der Meij (1988) that "unwillingness to respond and a student's anticipation of a negative reaction" were major factors that constrained question-asking among elementary students. Napell (1976) identified several behaviors that failed to facilitate interaction in the classroom: "(1) insufficient wait-time, (2) the rapid-reward, (3) the programmed answer, (4) nonspecific feedback questions, (5) teacher's ego-stroking and classroom climate, and (6) fixation at a low-level of

questioning" (p. 79). Each of these behaviors can be related to teacher or student questioning in the classroom.

One possible explanation for why students seldom ask questions is early training. Good, Slavings, Harel, and Emerson (1987) found that "ironically, because low-achieving students ask the most questions in kindergarten, asking questions in class may be perceived as undesirable. That is, teacher feedback intended to help students control impulses and not ask unnecessary questions may in subtle ways condition students to believe that they should only respond to teacher questions, not initiate questions" (p. 194). Their findings support what Dillon (1981) called a norm against questioning. Related to this concept, Good (1981) found that teachers used a series of negative responses toward low achievers: teachers tended to ask fewer questions, waited less time, asked fewer follow-up questions, criticized more, praised less, gave less accurate and less detailed feedback, and interrupted more than they did when dealing with other students.

The authors wanted to learn more about the association of teacher behaviors with student questioning. Not only were we trying to determine behaviors that reduce question-asking, but to determine behavior that might increase student questioning. Handley (1986) suggested the importance of paying attention to student nonverbal behaviors that signal a desire to say something: eye contact, pressing their lips together, mumbling, and raising up in their seats. Teacher alertness to readiness to communicate appears to be one factor. Verbal interaction seems to be another key teacher behavior, as Cornick and Thomas (1984) found that certain teacher prompts--"how?" "why?" and "tell me"--improved student involvement in the questioning process. A different kind of gender-related concept was suggested by Treichler and Kramarae (1983) when they indicated that college student interaction in the classroom may be improved by providing same-sex conversations among students. Given the importance of question-asking in the learning process, we need to go beyond who asks how many questions and why to an assessment of behaviors that may actually increase student question-asking.

Research Questions.

RQ1. Will rating of instructional interventions reveal gender-based differences for intentions to ask questions?

RQ2. Will intentions to ask questions be influenced by whether female or male instructors use instructional interventions to promote question-asking?

RQ3. Will instructional interventions increase intentions to ask question when class discussion is highly valued as a source of learning in a course?

RQ4. Will the instructional interventions increase intentions to ask questions when: (a) respondents report dissatisfaction with their current level of question-asking, and (b) respondents prefer instructor encouragement of question-asking from a larger number of students?

RQ5. What effect will situational factors have on gender, value, and satisfaction?

RQ6. Will the instructional interventions have an effect on situational factors?

Method

Respondents. Respondents were 220 (female = 57%, age median = 19.6) university undergraduates enrolled in a basic communication theory course at a midsize, midwestern, urban university during the Fall,1990 academic semester. During the last week of the semester, respondents received extra-credit for completing a survey assessing their classroom questioning behavior. The survey required approximately 25 minutes of class time to complete. Because students can enroll in a variety of different size classes ranging from classes of fewer than ten students to as many as 50 or more students, respondents were instructed to describe their questioning behavior in an average-sized class of 25-30 students in order to provide a common frame of reference for responding to the survey.

Mediating Variables. Two classification variables and four perceptual variables were defined as potential mediators of questioning behavior in the classroom. Student gender and instructor gender were defined as classification variables. They were included because the

Pearson & West (1991) study demonstrated that each variable uniquely affects classroom questioning behavior.

The four perceptual variables included the following: (a) the level of satisfaction with classroom questioning, (b) the type of instructional format that students report that best facilitates their learning in a course, (c) the percent of instruction in a course that should include class discussion, and (d) the student satisfaction with instructor's ability to encourage a variety of students to ask questions.

The four perceptual mediators were examined in an attempt to determine if motivation to ask questions and satisfaction with question-asking may be influenced by the interventions attempted by the instructor to promote question-asking. Several other variables could be defined as mediators, including cognitive or learning style of students. These four mediators, however, were selected because they represented initial starting points for determining those variables that instructors have the greatest ability to influence.

Level of satisfaction was assessed on a dichotomous scale (i.e., "I would like to ask more questions than I now do in class" versus "I would like to continue asking about the same number of questions"). Only five percent of respondents stated they would like to ask fewer questions, so they were eliminated from analysis. The type of instructional format preferred by respondents for facilitating their learning included three response categories (i.e., lecture class only, discussion class only, or a combination of the two). Respondents were instructed to select the one format they thought best reflected when they learn the most.

The third perceptual measure instructed respondents to report their preferred amount of time that should involve class discussion. Three response categories were provided (i.e., less than 10%, up to 25%, and 50% or more). The instructor's encouragement of student question-asking was assessed on a dichotomous scale (i.e., "The instructor should encourage class questioning form a larger variety of students" versus "The instructor should continue with the same level of encouragement").

Situational Measures. Factors other than gender and the perceptual measures, indeed, may explain question-asking behavior in the classroom. Research in communication apprehension (CA) has identified several factors that function as situational causes of anxiety (Buss, 1980; McCroskey, 1984). Several of these factors were included in this study as potential mediators. These factors differ from the instructional interventions tested in this study; they focus not on instructors' communication competence but on intrapersonal factors of students that may inhibit their questioning regardless of how instructors communicate in the classroom. The factors examined in this study were: (a) conspicuousness, (b) subordinate status, (c) ambiguity reduction, and (d) acquaintance level. An additional factor--physical readiness--also was identified for this study. The 14 items used to operationalize these factors yielded a Cronbach alpha of .90 with factor composite alphas ranging from .71 to .78.

Uncertainty reduction refers to the degree of uncertainty or predictability regarding the task at hand. Thus, as certainty or understanding of the course increases, question-asking may be initiated with increased probability of success (i.e., having information sufficient to asking a valid question). Three items were constructed to assess ambiguity reduction: (a) when I think I can't understand the material on my own, (b) when I am getting high grades in a course, and (c) when I am worried about my grade.

Conspicuousness is defined as standing out in one's environment or occupying the center of attention. In accordance with this concept, some students may prefer not to ask questions so they can avoid becoming the center of attention in class. Conspicuousness may be related to class size: as class size increases, students may feel more conspicuous asking questions. The conspicuousness items were: (a) when the class is small, (b) when the class has many students, and (c) when I don't want to use up class time.

Acquaintance level refers to how well students know one another. The better students know each other and the nature of questioning in a

particular course, the more willing they may be to ask questions. This idea may be particularly true if students perceive that they are able to ask questions of interest to the class. Thus, acquaintance level may require an initial period of adjustment, perhaps as long as several weeks into the semester. The three items used to measure acquaintance level were: (a) when I know the instructor well, (b) when I know the students well, and (c) when I first enroll in a course -- early in the semester.

Subordinate status is defined as perception of status differential caused by authority or power-based role differences (i.e., teacher to student) or by informational deficiency (i.e., not knowing as much about the topic as others). Subordinate status consisted of three items: (a) when I know more about the topic than other students, (b) when I have read the assigned text material, and (c) when other students seem to appreciate my questions.

The final factor identified especially for this study was physical readiness or the student's motivation to ask questions by virtue of their level of physical well-being. Two items defined physical readiness to ask questions: "when I am feeling good and when I am tired."

Instructional Interventions. The classroom intervention variables initially consisted of 28 items. Factor analysis reduced the number to 22 with these loading on one of three factors. Factor 1 loaded eight items (Eigenvalue = 8.12, %Variance = 29.1, alpha = .81) that were labelled as "instructor discussion style" (see Figure 1 and items 11, 16, 19, 20, 21, 22, 24, and 25). Factor 2 also loaded eight items (Eigenvalue = 3.77, %Variance = 13.5, alpha = .76). The factor was labelled "instructor interaction style" (see items 1, 6, 7, 12, 17, 18, 23, and 26.). These two factors differed only in emphasis. Factor 1 captured more clearly how the instructor structures the question-asking process in the classroom. Factor 2, on the other hand, identified the overall interaction style of the instructor. Factor 3 loaded six interventions (Eigenvalue = 1.46, %Variance = 5.2, alpha = .71) that were labelled "instructor motivation style" or perhaps more

appropriately as "instructor discouragement behavior." These items focused on the instructor's inability to create or sustain the interest of students.(see items 2, 3, 8, 9, 14, and 28).

The items were initially generated from current research in teacher communication competence. Accumulated research addressing elements of teacher competence has demonstrated that several of the interventions examined in this study constitute elements found to affect classroom learning (Andersen, Norton, & Nussbaum, 1981; Spitzberg & Hurt, 1987; Rubin & Feezel, 1986). The interventions tested in this study certainly do not exhaust the list of behaviors contributing to teacher communication competence. Those tested, however, do cover a wide range of behaviors that should initially be examined as influencing students to ask questions.

Classroom Behavior. A final measure assessed respondents behavior in class while other students ask questions. Three response categories were defined: (a) attentive listening, (b) question preparation (i.e., thinking of questions to ask, whether or not they are raised), and (c) inattention (i.e., daydreaming, doing unrelated work, becoming impatient, and talking to other students). Although respondents were instructed to select the one category that best characterized their behavior in general in class, behavior may vary with the course and with the nature of the question. Nonetheless, the measure was selected as a test of whether select mediators influenced classroom attentiveness regardless of the respondent's own record of question-asking.

Measurement. Responses to the situational measures and the interventions were measured on 7-point bipolar scales anchored from "extremely likely to ask questions" to "extremely unlikely to ask questions." Behavioral intention responses were selected over 5-point Likert agreement-disagreement scales in order to commit respondents to a stated position rather than committing them to an attitudinal preference for one intervention over another. The validity of behavioral intention scales is well-demonstrated in the research on interaction involvement by Cegala (1981) and by Infante (1982) on trait argumentativeness.

Analysis. The mediators were analyzed with multivariate ANOVA tests. Univariate ANOVA tests were then conducted to detect individual interventions and factors yielding the largest F-ratios. Analyses were confined to main effects because interaction effects were seldom observed and because the interactions contributed little variance that could not be explained by main effects. Multiple regression also was selected in assessing the relationship the instructional interventions and the situational factors.

Results

The Incidence of Classroom Questioning. Non-mediated frequency statistics were computed first to provide a benchmark for comparison between this study and others, most notably the Pearson and West (1991) report on classroom questioning behavior.

Fifty-percent of respondents reported asking questions from "once a week" to "once every class meeting." while 30 percent report "never" asking questions. When asked to report their most preferred method of asking questions, only 30 percent reported they directly asked questions during class. In contrast, 70 percent most often preferred the indirect methods of asking questions, particularly after class or immediately before the start of class.

Respondents also were instructed to report the percentage of course instruction they felt should be conducted through class discussion. One-third stated that at least one-half of course instruction should be conducted through class discussion. Only one-third preferred 25 percent or less of instruction time to be used in class discussion. Nearly 30 percent and 50 percent of respondents respectively, however, indicated that they learned the most in courses conducted through class discussion or through a combination of lecture and discussion. Only 18 percent preferred lecture instruction alone as influencing their level of learning. Furthermore, 30 percent thought that class questioning was "usually" or "nearly always" valuable, while another 30 percent rated questioning as valuable only "some of the time" or "seldom." Finally, nearly two-thirds of respondents preferred that question-asking should consume no more than five minutes, while the

remaining respondents preferred questioning consume 10 to 30 minutes of class time.

The later findings reveal potentially useful predictors for assessing student motivation for classroom questioning. Two additional factors also may offer information useful to understanding the conditions prompting questioning behavior. First, nearly 60 percent of respondents stated they "would like to ask more questions" in class; and second, nearly 70 percent stated that their "instructors should encourage questions from a larger number of students."

Frequency statistics revealed that only a handful of the interventions rated positively as influencing behavioral intentions to ask questions. Each was rated between 5.30 and 5.90. These instructor interventions included: the material is relevant to students' experiences, the instructor compliments students, the instructor thanks students for asking questions, the instructor avoids passing judgment on students' questions, and the instructor calls on students.

Gender Effects. One-half of the instructional interventions yielded significance with student gender. Two interventions were preferred by females: (a) they reported a stronger intention to ask questions when the instructor had the class sit in a circle, and (b) when the instructor avoids passing judgment on students' questions. Male students rated the other interventions more positively. One should note, however, that with the exception of one intervention (i.e., sit in a circle) none of the other interventions had a positive effect on intentions to ask questions (see Table 1).

Table 1 about here

The gender of the instructor also yielded a significant MANOVA with the interventions. The consistent finding across all six interventions yielding significance was that intentions to ask questions were positively influenced by female instructors. Students reported they were more likely to ask questions of female instructors than male

instructors when the class is conducted in a formal manner, when the instructor does not answer questions well, when the instructor is a serious person, and when responses to questions are dull. These interventions best reflect the instructor's interaction style, indicating that female instructors may increase student intentions to ask questions even when they do not solicit questions from the class (i.e., the instructor does not ask for questions or the instructor does not appear to want students to ask questions).

Interaction effects were not observed between gender of student and gender of instructor, thus demonstrating that all students are more likely to ask questions of their female teachers when the class is conducted through the interventions described in Table 2. Once again, as with findings for student gender, one should recognize that these findings are relative rather than absolute. That is, students only are slightly more likely to ask questions of their female instructors, as indicated by the seven-point scale used to measure intentions (see Table 2.)

Table 2 about here

Effects of Perceptual Measures. Only one of the perceptual measures tested--type of course in which students perceive they learn the most--failed to yield significance. The value of class discussion measure, however, did yield significance ($F = 1.38$, Wilks' = 87, df = 2.216, effect size = .17, power = .92, $p < 044$). Students who highly value discussion (i.e., prefer that 50 percent or more of a class time be instructed through discussion) reported stronger behavioral intentions to ask questions when the instructor: teaches in a clear fashion, insists that students ask questions, strays off the topic, calls on students, and asks students for questions. The value that these students place on discussion is shown more clearly through their intention to ask questions when the instructor plays "devil's advocate" and makes students answer their own questions. F-ratios ranged from 3.50 to 7.20 with mean differences ranging from .70 to 1.00 between those respondents who highly value discussion and those who do not

(i.e., prefer less than ten percent of instruction consist of discussion).

Two of the perceptual measures examined respondents' satisfaction with their question-asking behavior in class. The first mediator assessed whether satisfaction with their current amount of questions asked influenced rating of the interventions (i.e., "prefer to ask more" questions versus "continue asking about the same" number of questions). As findings in Table 3 indicate, respondents who wished they had asked more questions reported lower intentions to actually ask questions with the interventions listed in Table 3.

Table 3 about here

The second satisfaction mediator examined whether respondents prefer that instructors "encourage question-asking from a larger number of students" or "continue at about the same level." Table 4 demonstrates that respondents who prefer the encouragement of more students rate all but two of the interventions as increasing their intentions to ask questions (i.e., when the instructor is a serious person and does not appear to want students to ask questions). Unlike all other mediators examined, instructor encouragement resulted in higher mean ratings on intentions to ask questions.

Table 4 about here

Effects of Situational Factors on Intentions. Findings reported thus far have focused on instructional interventions instrumental in affecting behavioral intentions. Perhaps equally important to intentions to ask questions are factors within students or the classroom situation unrelated to instructors' intervention methods of facilitating question-asking.

Instructor encouragement was the only mediator to consistently yield significance with the situational factors tested in this study. Because significance was observed with three-quarters of the factors, findings are reported in Table 5.

Table 5 about here

Findings in Table 5 indicate that instructor encouragement increases intentions to participate when students are knowledgeable about the topic, are rewarded for their participation (i.e., are earning high grades and others appreciate their questions), do not feel conspicuous asking questions (i.e., when others are talking and questions do not interfere with class time), think they have increased their acquaintance level (i.e., attending class for a while and know students and instructor well), and when they feel physically ready and cognitively motivated (i.e., when unable to understand the information).

Instructor gender also yielded significance with one-third of the situational factors. The consistent finding to emerge with three of five interventions was that respondents, regardless of gender, reported stronger intentions to ask questions when their female instructors did the question-asking. As Table 6 demonstrates, respondents reported stronger intentions to ask questions when females instructors ask questions in a small class, when respondents know the instructor well, and when they cannot understand the material. These differences, however, did not hold when students failed to perceive a difference in the question-asking of male and female instructors. Further, when neither female nor male instructors asked questions, respondents reported lower intentions to ask questions in large classes even after the student had attended class for some time.[1]

Table 6 about here

Relationship Between Interventions and Situational Factors. A final set of analyses examined the relationship between the instructional interventions and the situational factors. Although considerable research has addressed each of these variables, little research has examined the influence of interventions on reducing situational factors often associated with state anxiety arousal. As findings in Table 7 indicate, the instructor's classroom interaction style highly correlated with generating interest in question-asking and also functioned to reduce conspicuousness and increase physical readiness to ask questions.

None of the instructional methods highly correlated with subordinate status, thus indicating that this factor is more strongly influenced by situational factors such as uncertainty or ambiguity regarding one's course performance and one's information level. Correlation also demonstrated that subordinate status is more a function of conspicuousness and acquaintance level in the classroom than the instructor's overall style of communication in the classroom.

Regression was next conducted to determine whether the interventions functioned to reduce situational factors inhibiting question-asking. Five regression models were conducted, one for each situational factor composite with all interventions defined as predictors. All five models yielded multiple correlations between .68 and .81, with five to eight interventions defining each model. Space limitations prohibit reporting all five models. Thus, those interventions most frequently defining the five models will be identified in the interest of assisting instructors in selecting interventions that influence the most situational factors.

One intervention--thanking students for their questions--predicted all five models. Thanking students functioned as the first predictor of uncertainty reduction ($r = ..57$), subordinate status ($r = .59$), and acquaintance level ($r = .57$), and it also functioned as the second best predictor of conspicuousness ($r = .55$). Two additional interventions functioned as predictors of three situational factors. The "instructor not passing judgment" intervention predicted uncertainty reduction ($r = .48$), conspicuousness ($r = .37$), and subordinate status ($r = .52$). The intervention "if the instructor is a serious person" predicted

acquaintance level (r = .27), physical readiness (r = .53), and conspicuousness (r = .50).

An additional three interventions functioned as predictors of two situational factors. Sitting in a circle predicted conspicuousness (r = .45) and acquaintance level (r = .39). Complimenting students predicted subordinate status (r = .47) and conspicuousness (r = 50), while keeping discussion focused predicted physical readiness (r = .53) and uncertainty reduction (r = 19). Two task-centered interventions each predicted one situational factor: teaching in a clear fashion predicted uncertainty reduction (r = .41), and encouraging questions unrelated to the discussion topic predicted acquaintance level (r = .43).

The final measure examined in this study was student behavior while other students asked questions. Females were more likely to pay attention than males (females = 64%, males = 45%), although males were more likely to think of questions to ask (females = 15%, males = 25%) and engage (females = 20%, males = 30%) in one of several inattentive behaviors (chi-square = 8.76, 2df, tau = .17, $p < .01$). Respondents who stated that instructors should encourage more students to ask questions also were more likely to pay attention (More = 64%, Same = 49%), and less likely to engage inattentive behaviors (More = 18%, Same = 36%) (chi-square = 6.24, 2df, tau = .15, $p < .04$). Finally, respondents reported that they were more likely to pay attention when both male and female instructors asked questions (66%) and less likely to to pay attention when only male instructors asked questions (28%). Inattention also was higher when male instructors (50%) asked more questions than female instructors (29%) (chi-square = 16.83, 6df, tau = .06, $p < .01$).[2]

Discussion

Pearson and West (1991) supported earlier research indicating that university undergraduates ask few questions in class. The purpose of their study was not to determine why students do or do not ask questions; but whether a gender-based "dynamic" between teacher and student explained classroom questioning behavior. The present study, therefore, attempted to take a step toward identify variables associated with question-asking in the classroom. Specifically, why are so few questions asked in the average college classroom? Our findings indicate

that a gender dynamic may explain, in part, question-asking in the classroom. These findings are inconsistent, however, with the Pearson and West study, perhaps because their study examined actual behavior while this one examined self-reports. Thus, self-reports may only reflect preferences that fail to consistently influence actual questioning behavior. Although students can define ideal classroom conditions under which they prefer asking questions, failure to receive such conditions may not inhibit their normal questioning behavior.

An important difference in the two studies should be noted: only ten percent of respondents rated their female instructors as asking the most questions in class, and only eight percent rated their male instructors as asking the most questions. The overwhelming majority of respondents failed to perceive any gender differences in their instructors' question-asking. This finding indicates that if indeed there are differences based on gender, sutdents are unaware of the differences. The lack of perceived differences may indicate that gender is only one of several variables critical to a student's decision to ask questions. This study has shown, however, that students perceive some gender differences. First, any student may feel less inhibited with his or her female instructors (see Table 2). Second, male students appear to be less constrained in asking questions regardless of the instructor's gender (see Table 1).

Given the inconsistent findings between student gender and instructor gender--as well as the generally weak intentions to ask questions--the search for more discriminating variables influencing question-asking may proceed best by minimizing gender differences. Although gender is a given variable that should not be eliminated, our attention in this study was directed toward other variables that instructors are able to directly influence. The inherent value that students hold toward class discussion and their level of satisfaction in asking questions are intrapersonal variables. Yet, each may be influenced by what instructors do in the classroom to affect their perceived value and satisfaction regarding questioning.

This study demonstrates partial support for each variable. For instance, students who highly value discussion respond more favorably to instructor attempts to enliven discussion (i.e., playing devil's

advocate and making students answer their own questions). The best evidence from this study showing how instructors may influence perceived value may be found in Table 3. That is, respondents who want to ask more questions may refrain from doing so unless the instructor can stimulate an interesting discussion and relate well with students (i.e., appears too intelligent or is too serious a person). Contrary to the idea that there is a norm from students against question-asking, 70 percent of respondents want to hear what their classmates have to say (see Table 4). Thus, the more the instructor can encourage a variety of students to ask questions, the more likely these students report they actually intend to ask their questions.

This study also shows that students rate select situational factors as influencing their intentions to ask questions. Again, instructor encouragement--of questions from a variety of students--prompts intentions when students are well-informed, when they have increased their acquaintance level, when they feel physically ready, and when they are performing well in the course. Perhaps the most important conclusion to draw from these findings is that once situational factors inhibiting interaction have diminished, question-asking will increase if instructors encourage as many students as possible to ask questions. Regression analyses further demonstrate that select interventions function to reduce or minimize certain situational factors. Three interventions in particular--thanking students for asking questions, not passing judgment on their questions, and demonstrating a sense of humor--influenced the largest number of situational factors. Thus, instructors should be able to promote question-asking of students once they have "settled" into a course, and instructors also may function as a catalyst in reducing situational constraints through their classroom interaction styles.

This study suggests that two sets of variables may need further examination in order to understand why students seldom ask questions in class. Results for regression demonstrate that "instructor communication" forms one subset of variables. That is, instructors themselves may negatively or positively influence question-asking by virtue of the interventions they select to facilitate discussion. Many of the interventions examined here reflect both pedagogical methods and

communication style of instructors. For instance, the nuances of language and nonverbal communication are certainly a significant part of why students do or do not ask questions: A shift from another student indicating impatience with the student who asked the question, a look of confusion when the teacher tries to regain a train of thought after answering a question, a tone of superiority from a teacher who responds to a student question (e.g., "Obviously..."), all may form part of the constraint a student encounters when he or she wants to ask a question.

If instructor communication style represents one subset of variables influencing question-asking, students themselves represent the second subset of variables. That is, some students may be prevented from asking questions because of their trait apprehension, which this study has only indirectly assessed (see footnote 2). Other students may fail to ask questions because they value learning methods other than class discussion. This study has not identified what subset of variables explain "satisfaction level" with question-asking. Situational causes unrelated to trait apprehension partially explain the low student satisfaction level. An underlying communication skill deficit also may explain the low satisfaction level. Thus, there may be value in placing greater emphasis on instructing students in questioning skills in the classroom. Perez (1986) suggested various behaviors that should be used in teaching students questioning skills: modeling good question behaviors, having students take turns asking and answering questions, and encouraging student questioning before a test. Andre and Anderson (1979) showed the potential value in teaching students questioning skills. Because of the oral nature of these skills, and because they are frequently related to interpersonal communication, public speaking, and listening, instruction in question-asking may be a valuable contribution to a student's skills for learning in various communication courses.

Instructors of communication may go one step further and assign students--as either part of their course grades or as a required but ungraded assignment--to ask at least one question in another course in which they are currently enrolled. Students could have the option of asking the question in the course in which they feel most informed. Further, as findings in this study indicate, students also may want to

select a course in which they receive sufficient comfort. They may find instructor encouragement, acquaintanceship, or lack of conspicuousness to be essential factors that prompt their question-asking. Instructors could use such an assignment as part of a unit of instruction on question-asking. In addition to developing students' skills in asking various forms of questions, a unit of instruction could include written exercises to sharpen understanding of functions performed by different kinds of questions--such as open, probing, or reflective--as well as instruction in preparing questions most appropriate to the topic and situation. Thus, instruction could focus on goal-setting to help students analyze and evaluate their reaction to the assignment (e.g., identifying the class, topic, or reading over which a planned question will be asked; identifying types of question to be asked; identifying and overcoming obstacles preventing asking the question; and observing class and instructor reactions to the question).

In summary, this study has demonstrated that a majority of students valued question-asking in their college courses. On the other hand, a majority of students also reported dissatisfaction with their current level of question-asking. Findings in this study suggest that the gap between the perceived value of question-asking and dissatisfaction with the amount of questions asked may be narrowed through various instructional interventions. The variance left unaccounted for by these interventions, however, suggests that both additional interventions and predictor variables need to be identified before the process of question-asking may be fully understood. Perhaps then both teachers and students can ask and answer questions in ways that better facilitate learning.

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Figure 1: Mediators Associated with Question-Asking

1. Instructor asks for questions.
2. Instructor uses formal manner.
3. Instructor has little time.
4. Instructor asks for written questions.
5. Student name not identified.
6. Instructor teaches in clear fashion.
7. Students sit in circle.
8. Instructor doesn't want questions.
9. Instructor unable to stimulate discussion.
10. Extra-credit for asking questions.
11. Instructor does not answer questions well.
12. Question-asking is part of course grade.
13. Student can relate to personal experience.
14. Instructor not focused.
15. Instructor plays "devil's advocate."
16. Instructor insists students ask questions.
17. Instructor complements.
18. Instructor encourages unrelated questions.
19. Students must answer their own questions.
20. Instructor is serious.
21. Instructor refrains from expressing opinion.
22. Instructor too intelligent.
23. Instructor doesn't pass judgment.
24. Instructor strays off topic.
25. Instructor's responses dull, boring, too long.
26. Instructor thanks students for questions.
27. Instructor calls on student.
28. Instructor doesn't ask for student questions.

End Figure 1

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[1] Discriminant analysis also was conducted as a follow-up test to univariate ANOVA tests. All variables examined in this study yielded significant discriminant functions. None of the functions, however, correctly classified more than 65 to 77 percent of respondents within their prior assigned membership group. Further, correlation between the discriminant function and the items (i.e., interventions and situational factors) were rarely above .40, thus demonstrating that few of the items functioned as strong discriminators on the function.

[2] Three additional variables also were examined as predictors: (1) frequency of question asking, (2) direct vs. indirect methods of asking questions (i.e., asking questions during class vs. asking questions either before or after class), and (3) classroom communication apprehension (Neer, 1987; Neer, 1990).

The first two variables yielded significance with a large number of interventions. These findings were not reported because the authors believe they only confirm what one would expect to find. That is, those who rarely asked questions rated the interventions more highly as did respondents who preferred the indirect methods of question asking. Thus, these variables by themselves do not add information to understanding why students do not ask questions.

Apprehension (CCA) level of students, however, may better explain frequency and direct vs, indirect methods of question asking. Indeed, CCA levels were higher among these respondents. Findings for CCA were not reported because scores were available for only 40 percent of the sample. Furthermore, CCA yielded significance for a smaller number of interventions than the variables reported. Thus, it would appear that variables other than apprehension explain question asking. For instance, 60 percent of respondents in this study reported dissatisfaction with their current level of question asking. Yet, research in apprehension has documented that only about 20 percent of U.S. college students experience severe apprehension, thus leaving the remaining two-thirds of dissatisfied respondents not satisfied for reasons other than apprehension.

Table 1

Effects of Gender on Question Asking

(F = 2.05, Wilks' = .77, Effect Size = .24, power = .99, p≤ .002)

Intervention	Females	Males	F	eta^2	P
Conducts Class in Formal Manner	3.44	4.88	8.73	.038	.003*
Allows Little Time for Questions	3.19	3.66	3.88	.017	.05**
Has Class Sit in a Circle	5.19	4.80	4.21	.019	.04**
Instructor Doesn't Want Questions	2.56	3.09	5.07	.022	.03**
Instructor Doesn't Answer Well	2.98	3.47	4.86	.021	.03**
Instructor Doesn't Focus Discussion	3.48	4.01	5.86	.026	.02**
Makes Students Answer Own Questions	2.97	3.66	8.55	.038	.004*
Instructor is a Serious Person	2.78	3.74	18.50	.078	.001*
Instructor Appears too Intelligent	3.17	3.84	7.73	.034	.006*
Instructor Doesn't Pass Judgment	5.45	4.83	10.14	.044	.002*
Instructor's Responses are Dull	2.83	3.28	4.18	.019	.04**

Note: *Power = .82 to .95, **Power = .49 to .60

Table 2

Effects of Instructor's Gender on Question Asking

(F = 1.43, Wilks' = .56, Effect Size = .17, Power = .98, $p < .01$)

Intervention	Female	Male	Both Ask	None Ask	F	eta^2	P
Formal Manner	4.79	2.88	3.79	3.30	5.71	.073	.001*
Doesn't Want Questions	3.79	2.88	2.75	2.54	3.21	.042	.03**
Doesn't Answer Well	4.25	3.58	3.08	3.08	4.64	.058	.005*
Serious Person	4.12	3.05	3.28	2.70	4.30	.056	.006*
Responses are Dull	4.29	2.94	2.95	2.70	6.01	.077	.001*
Doesn't Ask Questions	3.87	2.64	2.72	2.94	5.59	.069	.001*

Note: *Power = .87 to .96, **Power = .73

Table 3

Effects of Satisfaction Level on Question Asking

(F = 1.59, Wilks' = .80, Effect Size = .19, Power = .98, $p < .04$)

Intervention	Ask More	Ask About Same	F	eta^2	P
Formal Manner	3.48	3.94	4.16	.019	.04**
Doesn't Answer Well	2.84	3.43	8.25	.038	.004*
Serious Person	2.81	3.53	9.75	.045	.002*
Too Intelligent	3.10	3.34	7.75	.035	.007*
Responses are Dull	2.70	3.34	8.54	.039	.004*
Instructor Doesn't Ask	3.21	3.67	4.15	.018	.04**

Note: *Power = .80 to .89, **Power = .55

Table 4

Effects of Instructor Encouragement on Question Asking

(F = 2.29, Wilks' = .71, Effect Size = .28, Power = .99, $p < .001$)

Intervention	More	Same	F	eta^2	P
Instructor Asks for Questions	5.16	4.52	7.47	.037	.007*
Teaches in Clear Fashion	4.99	3.88	18.04	.086	.001*
Has Class Sit in a Circle	5.21	4.54	8.33	.042	.004*
Doesn't Want Questions	2.63	3.36	6.44	.032	.01**
Questions Relate to Me	5.75	4.56	27.58	.126	.001*
Instructor Encourages Class	4.98	4.29	5.02	.026	.03**
Instructor is Serious Person	3.06	3.70	7.85	.039	.006*
Doesn't Pass Judgment	5.36	4.70	7.48	.037	.007*
Instructor Thanks Students	5.41	4.68	12.09	.059	.001*

Note: *Power = .77 to .99, **Power = .60 to .71

Table 5

Effects of Instructor Encouragement of Situational Factors

(F = 2.10, Wilks' = .82, Effect Size = .18, Power = .97, $p < .009$)

Situational Factors	More	Same	F	eta^2	P
Already Read Text	5.63	5.12	3.95	.021	.05**
Attending Class Awhile	5.40	4.95	4.33	.023	.05**
If I'm Feeling Good	5.20	4.63	5.26	.028	.02**
Have Knowledge of Topic	5.31	4.85	4.35	.023	.04**
Lack of Understanding	5.30	4.51	9.51	.050	.002*
Class Appreciates Questions	5.51	5.04	4.13	.022	.04**
Have High Grade in Course	5.10	4.51	4.84	.026	.03**
Don't Want to Use Class Time	3.11	3.68	4.25	.023	.04**
Know Students Well	5.91	5.04	15.94	.082	.001*
Know Instructor Well	5.91	5.24	11.56	.061	.001*
When Others are Asking Questions	5.48	4.46	21.72	.108	.001*

Note: *Power = .86 to .97, **Power = .52 to .62

Table 6

Effects of Instructor Gender on Question Asking

(F = 1.34, Wilks' = .70, Effect Size = .11, Power = .92, $p < .06$)

Situational Factor	Female	Male	Both Ask	None Ask	F	eta^2	P
Attending Class Awhile	5.05	5.13	5.40	4.72	3.62	.048	.02**
Class is Small	5.60	5.00	5.91	5.51	3.19	.045	.03**
Class is Large	3.85	3.46	3.67	2.78	3.80	.053	.01**
Can't Understand	5.25	4.60	5.28	4.62	3.09	.043	.03**
Know Instructor	5.80	4.86	5.93	5.55	4.56	.063	.004*

Note: *Power = .92, **Power = .73 to .84

Table 7

Relationship between Interventions and Situational Factors

	S	R	M	U	C	A	PR	SS
Style (S)		.41	.74	.41	.58	.39	.60	.30
Relate (R)			.34	.64	.63	.58	.46	.46
Motivation (M)				.36	.62	.28	.63	.25
Uncertainty (U)					.64	.70	.52	.73
Conspicuousness (C)						.61	.72	.60
Acquaintance (A)							.47	.65
Physical Readiness (PR)								.43
Subordinate Status (SS)								